

# How It Works. Why It's Better.

## OptiBlend™ Proprietary Air-Gas Mixer Design and Fuel Control Valve

Natural gas is delivered to the combustion chamber using the existing air intake system. The OptiBlend™ proprietary **Air-Gas Mixer (AGM)** is installed just downstream of the stock air filter where it dictates the air-to-gas ratio in conjunction with the **OptiBlend™ Fuel Control Valve (FCV)**. The mixer uses the Venturi effect to draw gas into the engine. The fuel control valve has a 10-20 millisecond reaction time, allowing immediate throttle adjustment in response to changes in engine load. The fuel control valve utilizes internal software with fault detection and position control and is controlled by the **Programmable Logic Control (PLC)**. Each OptiBlend™ kit is **custom fit and commissioned** for your specific engine and application.



AIR-GAS MIXER (AGM)



FUEL CONTROL VALVE (FCV)



GAS TRAIN

**Zero Pressure System** The OptiBlend™ system relies on induction air to deliver fuel to the engine. This is much safer than positive pressure systems, which can mistakenly force too much gas to enter the engine, potentially causing engine damage.

**Engine Safety** OptiBlend™ is the only system on the market that can ensure substitution rates and engine safety when using variable source and quality inlet gas.

## OptiBlend™ PLC and FCV Proprietary Software Provides:

- Automatic system operation with engine start.
- Most efficient use of alternative fuel by maximizing substitution over the entire load range.
- Ability to use alternative fuels of various quality and energy content.
- Continuous feedback loops constantly monitoring engine parameters via J1939 to maintain the safety of your engine.
- Cellular or satellite based remote monitoring capabilities (optional).



CONTROL PANEL

The PLC is NEMA 4X certified

**Robust Hardware** The OptiBlend™ kit is specifically designed to handle harsh environments.

**Lower Emissions** OptiBlend™ is able to meet or exceed all emission requirements (including CO when paired with a diesel oxidation catalyst) of the engine's original certification.

**Cold Weather Options** The kit offers a cold weather package (optional) which allows operation down to -40°F. Normal temperature limits without the cold weather package is 5° F.

**Comprehensive Warranty** OptiBlend™ kits and kit-induced damage to your engine are under warranty for one year from the date of shipment. If your engine is damaged due to the malfunction of an OptiBlend™ kit, we will repair or replace your engine. **Note:** We have never had to repair or replace a customer's engine.

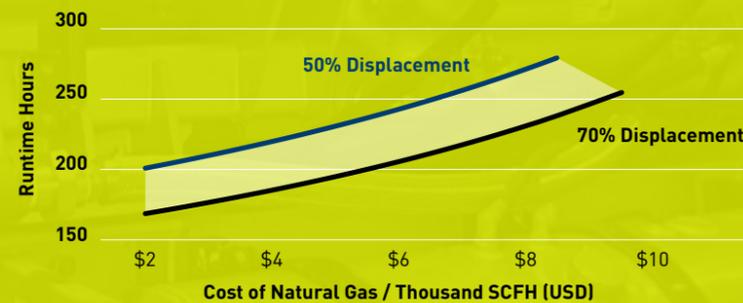


## OptiBlend™ provides:

- Lower Emissions
- Extended Runtime
- Ongoing Savings

### Achieve ROI in 250 runtime hours or less.

*(Assumes \$30K USD kit cost, \$2.78/gal. diesel cost.)*



### Our Technology

OptiBlend™ technology is based on the concept that inserting additional energy into the combustion chamber in the form of natural gas allows the engine to use less diesel to produce the same power. Typically, 50 to 70 percent of the diesel fuel normally used can be safely displaced with natural gas. This greatly reduces NOx formation due to the lower combustion temperature. In addition, the lower carbon content of natural gas results in less CO emissions.

### Industries that Benefit from OptiBlend™

**Oil and Gas companies** rely on OptiBlend™ for its durability in harsh environments. OptiBlend™ systems withstand extreme engine load fluctuations, high vibrations and extreme cold, making it the ideal solution for rigs and pumping sites located anywhere in the world.

**Hospitals and Data Centers** cannot be without power, especially during harsh storms or natural disasters. That's why they rely on OptiBlend™ for their backup power applications. By running primarily on natural gas, hospitals and data centers can extend their diesel supplies until power or deliveries are restored.

**Equipment Dealers and Engine Resellers** install OptiBlend™ kits on Caterpillar®, Cummins®, Kohler®, MTU, John Deere®, and Mitsubishi® engines, among others.

[OptiBlendFuels.com](http://OptiBlendFuels.com)

### Rapid ROI

Save thousands of dollars every day by using up to 70 percent less diesel fuel. By displacing diesel fuel with natural gas, you can realize 100% ROI on your retrofit in less than a month. See how fast you can recoup your OptiBlend™ investment by consulting the above chart.

### Applications

**Small Businesses** that have limited space for diesel storage use OptiBlend™ to meet the regulatory requirement or desired amount of backup power generation time.

**Urban Locations** use OptiBlend™ with their backup power system to meet environmental requirements.

**Remote Sites** with dual fuel can enjoy power longer than would be possible with diesel fuel alone.

### The Best Warranty in Retrofit Industry

Both your kit and your engine are under warranty for one year from the date it leaves our facility. That means if your engine is damaged due to a malfunction of an OptiBlend™ kit, we will repair or replace your engine at our expense.

Since 2009, when OptiBlend™ kits were first introduced to the market, we have never needed to replace an engine. *(An optional five-year extended warranty is available.)*

## Compare OptiBlend™

Feature	OptiBlend™	Competitor
Linear Gas Control	✓	✓
Programmable Fuel Mapping	✓	✓
Mass Airflow Sensor	✓	✓
Gas Throttle Position Feedback	✓	✓
Power Transducer	✓	✓
Vibration Sensors	✓	✓
J1939 Compatible	✓	Some
Able To Use Wellhead Gas	✓	Some
Closed Loop Displacement	✓	✗
OEM Diagnostic Messaging receive function	✓	✗
Adaptive Gas Correction	✓	✗
Real Time Substitution Targeting/Feedback	✓	✗
Real Time Bank Balancing	✓	✗

**OptiBlend™** technology allows your conventional diesel engine to run natural gas as its primary fuel without modifying the engine or the current diesel fuel system. The result? Lower fuel costs, lower emissions, and increased runtime.

**OptiBlend™**  
DUAL FUEL SYSTEMS

**We sell and service our kits worldwide.**

Please contact Stephanie Kubik for a quote or more information

303.468.1705 | [skubik@edeninnovations.com](mailto:skubik@edeninnovations.com)  
12395 Mead Way, Littleton, CO 80125

[OptiBlendFuels.com](http://OptiBlendFuels.com)

# OptiBlend™ Dual Fuel Retrofit System



**OptiBlend™**  
DUAL FUEL SYSTEMS